Progress Report on a Multi-Lab Joint Proposal for Accelerator Based Neutrino Initiatives

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SMTF Meeting

Jan 19, 2005

DOE Call for Proposals for Neutrino Initiatives

- Several $M rumored to be available
- Both Detector and Machine proposals
- ~1 page per ~$500k – lucrative!
- Jan 5th, with proposals due Jan 23rd (!)

An opportunity to start building a coherent multi-lab effort on the SCRF Proton Driver.

A joint proposal, not yet a formal collaboration.

Incremental DOE Funding for Neutrino Initiatives

- Subject: a call for funding request for neutrino initiatives R&D
- Date: Wed, 28 Dec 2005 15:17:28 -0500
- From: Byon, Aesook <Aesook.Byon@science.doe.gov>
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- **The FY06 HEP budget contains a new R&D funding line specifically allocated for neutrino initiative R&D.**

- **We are calling for submission of proposals for R&D activities which will further progress on various neutrino initiatives. The requests should address the key scientific areas identified by the recent APS multi-divisional study on opportunities in neutrino physics, "The Neutrino Matrix." The request should contain the title of the specific program area, amount requested, info on salary and M&S (Materials & Services) split, and a brief justification (benefits and progress to be gained if provided, impacts if not provided). Detailed technical proposals are not desired; the level of detail should be approximately that of a letter of intent, no more than 5 pages.**

- **If the R&D proposal involves multiple collaborators (lab and universities) please submit a single proposal which clearly spells out the budget request broken down by collaborator and gives a brief description of the work that each collaborating institute will perform.**

- **Please email the request to me and copy to Glen Crawford by Friday, Jan 23 if possible.**

- Thank you.
- Aesook

Our Planned Response

- FNAL Cover Page Endorsing Joint Proposal
- 1-page requests from each lab
  - Start with “traditional” HEP labs
    - ANL, FNAL, BNL, LBL, (?SLAC?)
  - M&S heavy if possible
  - FNAL request will be pure M&S (SMTF parts)
  - Efforts at Non-DOE-HEP labs (NCSL/JLab beta=0.81 cavities, etc) funded thru FNAL
- R&D Efforts may serve as template for involvement in Proton Driver construction

BNL Joins FNAL PD Effort

- Late last year BNL decided to pursue neutrinos in the context of a collaboration with FNAL PD
  - Avoided planned “shoot-out”
  - Opened door for inter-lab collaboration
  - Accelerator, Beamline, & Physics/Detector collabs.
  - Very good news for HEP. DOE should reward this
- Nov 05 - Meeting @BNL w/directors.
- Dec 05 - Conference call (Marchionni, Holmes, Foster) & lower-level contacts to discuss specifics
- Jan 05 – Incremental funding for Neutrinos provides vehicle for initiating BNL Collaboration on SCRF Proton Driver.

Successful ANL Collaboration Ongoing (unfunded) since 2004

- Accelerator Physics (P. Ostroumov)
  - Original concept for “ILC-compatible” linac
  - Detailed AP design & simulation
  - RFQ vane design
- SCRF Spoke Resonator (K. Shepard)
  - Transfer ANL’s best-in-world Spoke performance (developed for RIA)
  - ~30% improvement with new FNAL EM design
  - Improvement may feed back to RIA design
  - Spoke Test Cryostat design collaboration

NSCL(MSU) / JLAB - Ongoing

- MSU (NSCL) collaboration ongoing since 2005
- 1.3 GHz beta=0.81 cavity prototypes for PD
- Very cost effective
  - Low overhead, free machine shops
  - Funded from FNAL via MoU with PD
- Very fast moving & flexible
- Single-Crystal work (w/ P. Kneisel JLAB)
- Technology Transfer vehicle for FNAL

LBNL

- Informal Contacts & Advice since 2002
- Long-standing enthusiasm for PD at LBNL
- 10-page “Letter of Interest” (fall 2005)
- No money available (until recently)
- Scope uncertain, but will likely include at least collaboration on LLRF system design and E-cloud investigations

SLAC - ? (under discussion)

- Modulator Switch Collaboration (ongoing)
  - Initiated (bottom-up) early 2005, working well
  - Design complete, Delivery ~ Feb
  - Minimal: funding for commissioning help
- New: (?) 1300 MHz TESLA Klystron ($850k)
  - Crucial item for either “fast ILC” or Proton Driver
  - Joint procurement by SLAC/ILC and PD?
  - SLAC Supervision of US Vendor (CPI)?
- Coordination of MBK development among (Euro-FEL, ILC, PD) is interesting challenge